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## NOTICE OF ALLOWANCE AND FEE(S) DUE

36088

7590

05/20/2008

KANG LIM 3494 CAMINO TASSAJARA ROAD #436 DANVILLE, CA 94506 EXAMINER

ROBINSON BOYCE, AKIBA K

ART UNIT PAPER NUMBER

3628

DATE MAILED: 05/20/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/741,958	12/20/2000	Michael Neal	DEM1P001	7264

TITLE OF INVENTION: PRICE OPTIMIZATION SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$0	\$0	\$1440	08/20/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

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III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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36088 7590 05/20/2008  KANG LIM 3494 CAMINO TASSAJARA ROAD #436 DANVILLE, CA 94506			I h Ste ad- tra	ereby certify that the	is Fee(s	of Mailing or Transm ) Transmittal is being icient postage for first SSUE FEE address a ) 273-2885, on the da	deposited with the United class mail in an envelope above, or being facsimile te indicated below.
							(Depositor's name)
			_				(Signature)
			L				(Date)
APPLICATION NO.	FILING DATE		FIRST NAMED INVENTO	R	ATTOR	RNEY DOCKET NO.	CONFIRMATION NO.
09/741,958	12/20/2000		Michael Neal			DEM1P001	7264
	i: PRICE OPTIMIZATIO						
APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE		E FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440 •	<b>\$</b> 0	\$0		\$1440	08/20/2008
EXAM	IINER	ART UNIT	CLASS-SUBCLASS				
ROBINSON BO	YCE, AKIBA K	3628	705-010000				
. Change of correspondence address or indication of "Fee Address" (37 :FR 1.363).  Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.  ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON "			or agents OR, alternate (2) the name of a sing registered attorney or 2 registered patent att listed, no name will b	he names of up to 3 registered patent attorneys gents OR, alternatively,  he name of a single firm (having as a member a stered attorney or agent) and the names of up to gistered patent attorneys or agents. If no name is d, no name will be printed.			
(A) NAME OF ASSIG	GNEE		(B) RESIDENCE: (CIT	Y and STATE OR C	OUNTI	RY)	cument has been filed for
lease check the appropr	iate assignee category or	categories (will not be pr	rinted on the patent):	■ Individual   □ Co	rporatio	on or other private grou	up entity Government
a. The following fee(s) are submitted:  Issue Fee Publication Fee (No small entity discount permitted) Advance Order - # of Copies			<ul> <li>b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</li> <li>A check is enclosed.</li> <li>Payment by credit card. Form PTO-2038 is attached.</li> <li>The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number (enclose an extra copy of this form).</li> </ul>				
a. Applicant claim	<b>tus</b> (from status indicated as SMALL ENTITY statu	ıs. See 37 CFR 1.27.	☐ b. Applicant is no lo				
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n application. Confiden ubmitting the completed his form and/or suggesti	tiality is governed by 35 d application form to the ions for reducing this bu	U.S.C. 122 and 37 CFR USPTO. Time will vary rden, should be sent to th	1.14. This collection is e depending upon the independing the chief Information Office.	stimated to take 12 r ividual case. Any co cer. U.S. Patent and	ninutes mments Tradem	to complete, including on the amount of time ark Office, U.S. Depar	by the USPTO to process); gathering, preparing, and e you require to complete tment of Commerce, P.O. or Patents, P.O. Box 1450,

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.	
09/741,958 12/20/2000		Michael Neal	DEM1P001 7264		
36088 75	590 05/20/2008		EXAM	INER	
KANG LIM 3494 CAMINO TASSAJARA ROAD #436			ROBINSON BOYCE, AKIBA K		
			ART UNIT	PAPER NUMBER	
DANVILLE, CA 9	94506		3628		
			DATE MAILED: 05/20/2008		

### **Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 535 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 535 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 (571)-272-4200.

	Application No.	Applicant(s)				
	00/741 059	NEAL ET AL				
Notice of Allowability	09/741,958 <b>Examiner</b>	NEAL ET AL.  Art Unit				
·						
	AKIBA K. ROBINSON BOYCE	3628				
The MAILING DATE of this communication appear All claims being allowable, PROSECUTION ON THE MERITS IS herewith (or previously mailed), a Notice of Allowance (PTOL-85) NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RI of the Office or upon petition by the applicant. See 37 CFR 1.313	(OR REMAINS) CLOSED in this ap or other appropriate communication IGHTS. This application is subject t	plication. If not included n will be mailed in due course. <b>THIS</b>				
1. $\boxtimes$ This communication is responsive to <u>communications filed</u>	<u>2/15/08</u> .					
2. The allowed claim(s) is/are <u>1-16</u> .						
3. Acknowledgment is made of a claim for foreign priority ur	nder 35 U.S.C. § 119(a)-(d) or (f).					
a) ☐ All b) ☐ Some* c) ☐ None of the:						
<ol> <li>Certified copies of the priority documents have</li> </ol>	e been received.					
2.  Certified copies of the priority documents have	been received in Application No					
3. Copies of the certified copies of the priority do	cuments have been received in this	national stage application from the				
International Bureau (PCT Rule 17.2(a)).						
* Certified copies not received:						
Applicant has THREE MONTHS FROM THE "MAILING DATE" noted below. Failure to timely comply will result in ABANDONM THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.		complying with the requirements				
4. A SUBSTITUTE OATH OR DECLARATION must be subm INFORMAL PATENT APPLICATION (PTO-152) which give						
5. CORRECTED DRAWINGS ( as "replacement sheets") mus	st be submitted.					
(a) $\square$ including changes required by the Notice of Draftspers	on's Patent Drawing Review ( PTO	-948) attached				
1) ☐ hereto or 2) ☐ to Paper No./Mail Date						
<ul><li>(b) ☐ including changes required by the attached Examiner's Paper No./Mail Date</li></ul>	(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date					
Identifying indicia such as the application number (see 37 CFR 1 each sheet. Replacement sheet(s) should be labeled as such in the						
6. DEPOSIT OF and/or INFORMATION about the deposit attached Examiner's comment regarding REQUIREMENT						
Attachment(s) 1. ☐ Notice of References Cited (PTO-892)	5. ☐ Notice of Informal F	Patent Application				
<ol> <li>Notice of References Cited (PTO-692)</li> <li>Dotice of Draftperson's Patent Drawing Review (PTO-948)</li> </ol>	6. ☐ Interview Summary	• •				
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<ol> <li>Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 3/20/08</li> </ol>	7. 🛛 Examiner's Amendi	ment/Comment				
Examiner's Comment Regarding Requirement for Deposit of Biological Material	8. 🛛 Examiner's Stateme	ent of Reasons for Allowance				
-	9.					

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## Allowable Subject Matter

#### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kang Lim on 3/28/08.

The application has been amended as follows:

Claim 1. An apparatus A computer program embedded on a computer readable medium configured to execute steps for computing a preferred set of prices for a plurality of products, comprising:

an econometric engine for modeling internal sales, using an econometric engine, as a function of price to create an internal sales model, wherein said econometric engine clusters said plurality of products into discrete sets of related products whereby each said set is made up of highly substitutable related products, further wherein said each said set is defined by a user such that each said set is unique to said user, and wherein said sets are generated by comparing product attribute information, and wherein the internal sales model is for the discrete sets of highly substitutable products;

a financial model engine for modeling costs, using an financial model engine, to create a cost model which includes an activity-based costing module configured

to receive variable costs and fixed costs, wherein variable costs are related to the volume of sales and wherein fixed costs are independent of volume of sales, wherein said cost model determines a total cost for each product in a given demand group in a given store for a given time period by computing a cost for each selected costing activity including labor, stocking time, transportation, receiving, inventory, bagging, checkout and invoicing, and wherein computing costs utilizes industry standards data to provide standard cost estimates, and wherein the total cost for each product is dependent upon the attribute information of that product; and an optimization engine coupled to the econometric engine and financial model engine to receive receiving input using an optimization engine coupled to the econometric engine and financial model engine, from the econometric engine and financial model engine, wherein the optimization engine generates the preferred set of prices.

Claim 2. The apparatus computer program, as recited in claim 1, wherein the optimization engine receiving input using an optimization engine comprises:

a strategy implementation module, which stores storing a plurality of price limiting strategic considerations using a strategy implementation module; and

a price calculator connected to the strategy implementation module, the financial model engine, and the econometric engine, wherein the price calculator determines determining the preferred set of prices using a price calculator connected to the strategy implementation module, the financial model engine,

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and the econometric engine, based on price limiting strategic considerations, the sales model, and the cost model, further wherein said price limiting strategic considerations iteratively constrain the preferred set of prices to fall within limits conforming to business strategy, wherein said strategy implementation module is a natural language based rules engine which translates said price limiting strategic considerations into rules used by said price calculator.

Claim 3. The apparatus computer program, as recited in claim 2, further comprising a support tool connected to the optimization engine wherein the support tool receives receiving the preferred set of prices using a support tool connected to the optimization engine wherein the support tool from the optimization engine and provides a user interface to a client, wherein the user interface provides the preferred set of prices to the client.

Claim 6. An apparatus A computer program embedded on a computer readable medium configured to execute steps for computing a preferred set of prices for a plurality of products comprising:

an econometric engine for modeling internal sales, using an econometric engine, as a function of price to create an internal sales model based on Bayesian modeling, wherein data from at least two stores is combined to obtain a Bayesian estimation of the internal sales model, further wherein said econometric engine clusters said plurality of products into discrete sets of related products whereby each said set is made up of highly substitutable related products, wherein said

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sets are generated by comparing product attribute information, further wherein said each said set is defined by a user such that each said set is unique to said user, and wherein the internal sales model is for the discrete sets of highly substitutable products;

a financial model engine for modeling costs, using an financial model engine, to create a cost model which includes an activity-based costing module configured to receive variable costs and fixed costs, wherein variable costs are related to the volume of sales and wherein fixed costs are independent of volume of sales, wherein said cost model determines a total cost for each product in a given demand group in a given store for a given time period by computing a cost for each selected costing activity including labor, stocking time, transportation, receiving, inventory, bagging, checkout and invoicing, and wherein computing costs utilizes industry standards data to provide standard cost estimates, and wherein the total cost for each product is dependent upon the attribute information of that product; and

an optimization engine coupled to the econometric engine and financial model engine to receive receiving input using an optimization engine coupled to the econometric engine and financial model engine, from the econometric engine and financial model engine, wherein the optimization engine generates the preferred set of prices.

Claim 7. The apparatus computer program of claim 6 wherein the Bayesian model is a Bayesian

Shrinkage model.

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Claim 8. The apparatus computer program of claim 7 where the Bayesian

Shrinkage model is a multi-

stage model.

Claim 9. The apparatus computer program of claim 6 wherein the econometric

engine provides

further comprising providing demand coefficients to the optimization engine, the

demand coefficients used for estimating demand given market conditions.

Claim 10. The apparatus computer program of claim 8 wherein the market

conditions include a price

point.

Claim 11. The apparatus computer program of claim 6 wherein the econometric

engine divides further comprising dividing the plurality of products into a plurality

of discrete sets of related products whereby each said set is made up of highly

substitutable related products, further ,where at least one of said discrete sets of

related products is a set of at least one product and wherein at least one of the

discrete sets of related products is a set of at least two products.

Claim 12. The apparatus computer program of claim 11 wherein the econometric

engine generates further comprising generating a model for determining the

fraction of internal sales of each discrete set of related products made up by

each product.

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Claim 13. The apparatus computer program of claim 12, wherein the econometric engine determines further comprising determining an internal sales model for each discrete set of related products so that the optimization engine is able to calculate demand for said products by multiplying the fraction of sales of each discrete set of related products made up by each said product with the internal sales model for the discrete set of related products to which the product belongs.

Claim 14. The apparatus computer program of claim 1 wherein said econometric engine further comprises an imputed variable generator for comprising providing using an imputed variable generator, imputed econometric variables to the optimization engine, the imputed econometric variables used for estimating missing or incomplete product parameters.

Claim 16. The apparatus computer program of claim 6 wherein said econometric engine further comprises an imputed variable generator for comprising providing using an imputed variable generator, imputed econometric variables to the optimization engine, the imputed econometric variables used for estimating missing or incomplete product parameters.

- 2. Claims 1-16 are allowed.
- 3. Since allowable subject matter has been indicated, applicant is encouraged to submit formal drawings in response to this Office Action. The early submission of formal drawings will permit the Office to review the drawings

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for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

- 4. The following is an examiner's statement of reasons for allowance. None of the prior art of record either individually or in combination teach the following:
- cluster[ing] said plurality of products into discrete sets of related products whereby each said set is made up of highly substitutable related products, further wherein said each said set is defined by a user such that each said set is unique to said user.

The present invention discloses a system and method for computing a preferred set of prices for a plurality of products.

The allowable feature of cluster[ing] said plurality of products into discrete sets of related products whereby each said set is made up of highly substitutable related products, further wherein said each said set is defined by a user such that each said set is unique to said user is not disclosed by any prior art reference.

The closest prior art, Ouimet et al (US 6,094,641) shows a method for implementing a demand model to include a price threshold. The next closest prior art, Ouimet et al (US 6,078,893) discloses a method for tuning a demand model with respect to random fluctuations in sales data, thereby providing a model-based approach to pricing. The next closest prior art, Ouimet et al (US 6308162) discloses a system for controlling the optimization of an enterprise planning model while simultaneously satisfying at least one strategic constraint not taken into account in the enterprise planning model. The next closest prior

art, Hartman et al (US 6,725,208) discloses a method for optimizing a system where an input layer for receiving inputs, an output layer for outputting predicted outputs, and a hidden layer for storing a learned representation for mapping the input layer to the output layer are all provided, and utilizing the stochastical Bayesian-type method is provided for complete optimization. The next closest prior art, Bhattacharya (US 4907170) discloses an adaptive polynomial network with a structure that provides the capability of inferring missing input information. However, Ouimet et al '641, Ouimet et al '893, Ouimet et al '162, Hartman et, and Bhattacharya all fail to disclose the feature of cluster[ing] said plurality of products into discrete sets of related products whereby each said set is made up of highly substitutable related products, further wherein said each said set is defined by a user such that each said set is unique to said user. This distinct feature has been added to independent claims 1, 4 and 6, and renders them and all claims that depend from them allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akiba K Robinson-Boyce whose telephone

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number is 571-272-6734. The examiner can normally be reached on Monday-Friday 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Hayes can be reached on 571-272-6708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the 
•Patent Application Information Retrieval (PAIR) system, Status information for 
published applications may be obtained from either Private PAIR or Public PAIR. 
Status information for unpublished applications is available through Private PAIR 
only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR 
system, contact the Electronic Business Center (EBC) at 866-217-9197 (tollfree). If you would like assistance from a USPTO Customer Service 
Representative or access to the automated information system, call 800-7869199 (IN USA OR CANADA) or 571-272-1000.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

A. R. B. May 20, 2008

/Akiba K Robinson-Boyce/

Primary Examiner, Art Unit 3628